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**The Australian
APEC Study Centre**



Genetic Resources and Growth -TRIPs and CBD

- **How to improve Access and Benefit Sharing without stifling agricultural development and innovation.**

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Acronyms

ABS	access and benefit sharing
AHOEWG	Ad Hoc Open Ended Working Group
BIO	Biotechnology Industry Organization
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
CIMMYT	International Maize and Wheat Research Centre
COP	Conference of the Parties
CSIRO	Commonwealth Scientific and Industrial Research Organisation
FAO	Food and Agriculture Organization
IP	intellectual property
NGO	non government organization
PhRMA	Pharmaceutical Research and Manufacturers of America
SMTA	Standard Material Transfer Agreement
TRIPS	Trade Related Aspects of Intellectual Property
UPOV	International Union for the Protection of New Varieties of Plants
WIPO	World Intellectual Property Organization
WTO	World Trade Organization
UNEP	United Nations Environment Programme

Executive Summary

Proposals by Brazil, India and African countries for a new and legally-binding Protocol to the Convention on Biological Diversity (CBD) to govern access and benefit sharing from use of genetic resources would impose major costs on the world economy and particularly on developing countries.

These costs would rise if Brazil and India also succeeded inserting a related obligation of prior disclosure of use of genetic resources in patents in the WTO Trade Related Aspects of Intellectual Property Rights Agreement (TRIPS).

These measures would undermine the capacity of patent law to reward innovation and would constrain agricultural development in developing countries.

A decision in the CBD is scheduled for October 2010. Draft negotiating text refers to revocation of existing patents; criminal penalties; new border restrictions; payments to developing countries; a trust fund where origin is unclear; and inclusion of NGOs in dispute resolution procedures.

Differences among members of the CBD are so wide it is unlikely agreement will be reached by the deadline. Even if it were possible, the result would be adverse for many countries.

To feed a rising world population, investment in new and improved varieties must be increased. The growth in agricultural yield is slowing.

The restrictions proposed in the CBD and in the TRIPS Agreement would reduce investment and impede access to these vital genetic resources. The well-established program set up by the International Union for the Protection of New Varieties of Plants (UPOV) and the Food and Agricultural Organization (FAO), which facilitate access by developing countries to very important agricultural genetic resources, would be undermined.

The case for a legally binding instrument in the CBD rests on allegations of biopiracy of developing countries' genetic material. The incidence of biopiracy is however low or non-existent. And patents cited as examples of biopiracy have been overturned under existing intellectual property arrangements. The system is working. There is no case to overturn it.

The case masks a mistaken assessment by officials in some countries that this approach would ensure more benefits accrue to nationals rather than foreign entities. The end result will be different - greater government control over use of the resource by anyone, national or foreigner. That is why it is supported by groups which oppose intellectual property and consider genetic materials should be owned and developed by the state rather than private entities.

A cruel paradox is that the proposed instrument would discourage, not encourage, bioprospecting and thereby reduce the capacity of people in developing countries to benefit from their biodiversity endowments.

Nor does a legally binding international treaty automatically secure the rights of indigenous peoples to benefit from their traditional knowledge or genetic resources in their stewardship. That can be simply achieved by establishing property rights to them in national law. In many developing countries there are no such rights.

There are non-controversial alternatives upon which an effective regime to improve access and benefit sharing can be built. They include strengthening existing CBD guidelines and national regimes, creating property rights, developing national certificates of compliance, use of voluntary industry codes and enhancing capacity.

This system would be cheaper, it would not chill innovation and it would preserve the capacity of multilateral institutions to support agricultural development in all countries. A regime built on that approach could deliver an effective regime by October 2010. It is the only way it can be done.

Introduction

Sections of the international community posit that “biopiracy” of the genetic resources of developing countries is widespread and needs to be addressed. New legal rights are being proposed in international instruments to redress this problem.

A Protocol to the United Nations Convention on Biodiversity (CBD) on Access and Benefit Sharing of Genetic Resources is sought, amendments have been proposed to the World Trade Organization (WTO) Agreement on Trade Related aspects of Intellectual Property (TRIPS) and the matter is on the agenda of the World Intellectual Property Organization (WIPO).

However the contention that biopiracy is a problem is weak. There is no systemic problem. Yet the remedies proposed are so far-reaching they would seriously undermine the capacity of society to secure the benefits of innovation and to protect intellectual property. Development and growth of agricultural, biotechnology and pharmaceutical industries would be jeopardized. The impacts on these industries will be detrimental to the development goals of the world’s emerging economies.

This report highlights some implications for agricultural producing countries. It also outlines strategies that would meet the commitment to create a global regime for Access and Benefit Sharing of Genetic Resources, but without undermining the benefits of existing intellectual property law.

This report is part of a program on research on intellectual property by the Australian APEC Study Centre at RMIT University, Melbourne. The work has been part funded by a grant from the Pharmaceutical Research and Manufacturers of America (PhRMA).

Chapter 1: International Negotiations

Proposals to alter intellectual property law with far reaching implications for agricultural, biotechnology and pharmaceutical industries are on the table in international fora.

1.1 Proposals in the WTO

The mandate for the Doha Round negotiations requires WTO members to continue to review, *inter alia*, TRIPS Article 27.3(b) which gives members the right to exclude from patentability plants, animals and essentially biological processes for the production of plants and animals.¹ There is also an obligation to review the relationship between TRIPS and the CBD; the protection of traditional knowledge and folklore; and other relevant new developments.² No specific objective is stated for the review.

A group of developing countries represented by Brazil and India, with the support of the Africans, want to amend the TRIPS Agreement so that patent applicants are required to disclose the country of origin of a biological resource and/or associated traditional knowledge (“a disclosure obligation”). Under the proposal, the applicant must show evidence that they received “prior informed consent” from the country of origin and provided for “fair and equitable” benefit sharing.³

Discussions in TRIPS have revealed very substantial differences between developed and developing countries on a disclosure obligation for patents. It is unclear how, let alone when, such differences might be

¹ “Members may also exclude from patentability: ...plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof.”

² Paragraph 19, Doha Ministerial Declaration,

http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm#trips; See also http://www.wto.org/english/tratop_e/trips_e/art27_3b_e.htm

³ WTO, TRIPS, Reviews, ‘Article 27.3(B), and Related Issues: Background and the current situation’, see http://www.wto.org/english/tratop_e/trips_e/art27_3b_background_e.htm

resolved. Nor is it clear whether Brazil, India and others might be treating the proposal as “negotiating coin” in the Doha Round negotiations.

In July 2008, a proposal was presented to the WTO by Brazil, India, other developing countries, the EU and Switzerland linking “disclosure” issues to two geographical indications issues also before TRIPS negotiators.⁴ The proposal sought agreement to negotiate the three issues in parallel (a ‘single undertaking’ negotiation). Members remain divided over this issue. Some consider this a negotiating stratagem.

Those opposed to a disclosure obligation can be characterized as favoring pursuit of the commonly accepted objectives of ABS without amending TRIPS. Other options have been put forward: disclosure through WIPO (Switzerland); disclosure, but outside patent law (EU); and use of national legislation (US).⁵

The Brazil and India disclosure proposal has significant consequences for intellectual property law, the exercise of property rights over biological resources, and for development. The proposal envisages international rules requiring each WTO Member to develop a national system for regulating transfer of ownership of genetic resources. The case has not been made that such an amendment to TRIPS is necessary. The international regime envisaged in the proposal is better expounded in a draft Protocol tabled in CBD negotiations.⁶

1.2 Proposals in the CBD

Parties to the CBD agreed in 2001 that there should be an international regime that facilitates access and benefit (ABS) sharing of genetic resources.⁷ The supporting contention is that developing countries which “own” genetic material are not receiving sufficient

⁴ WTO, Draft Modalities for TRIPS related issues, TN/C/W/52, 19 July 2008.

⁵ WTO Secretariat, IP/C/W368/Rev.1; see also

http://www.wto.org/english/tratop_e/trips_e/art27_3b_background_e.htm (viewed 21 October, 2009)

⁶ See Section 1.2 and Annex 1 for reference and summary.

⁷ Parties to the Convention began working towards implementing that commitment in 2002.

compensation because of biopiracy of their genetic resources.⁸

The formal debate is about how to ensure there is appropriate access to genetic resources and how benefits should be shared from that access. The proposal for a legally binding regime on ABS is informed not by interest in protecting biological diversity, but economic interests - to halt biopiracy and to secure rents for national entities.

It is also advanced by some non-governmental organizations (NGOs) which exhibit long-term antipathy to the basic precepts of intellectual property, particularly the granting of patents and similar rights, such as to plant varieties.⁹

As in the WTO deliberations, there is no consensus among parties to the CBD about the nature of an ABS regime. Most developing countries (led also in the CBD forum by Brazil, India and the African group) favor a legally binding Protocol to the CBD.¹⁰ They seek arrangements that would restrict access to genetic resources and weaken intellectual property rights that govern use of inventions on food, agriculture and forestry.¹¹ Most developed countries are opposed.

Draft negotiating text is on the table.¹² A decision is scheduled at the tenth Conference of the Parties (COP 10), to be held in Japan in October 2010. This will be preceded by two meetings of the Ad Hoc Open-Ended

⁸ There is no agreed definition of biopiracy and no evidence it is a substantial problem. Detail is in Chapter 3.

⁹ Soplin and Muller claim that "The CBD principles and rules on ABS were conceived on the basis of a "classic" paradigm which is becoming in a way, outdated and illusory (our italics)". Soplin, S. and Muller, M. (2009), *The Development of an International Regime on Access to Genetic Resources and Fair and Equitable Benefit Sharing in a Context of New Technological Developments*, Initiative for the Prevention of Biopiracy, Year IV No. 10, April, page 8, see <http://www.cbd.int/abs/doc/serie-iniciativa-2009-04-en.pdf>.

¹⁰ There is already a form of international regime set out in the non-binding "Bonn Guidelines on Access and Benefit Share of Genetic Resources" which have been adopted by the CBD. Detail is in Chapter 6.

¹¹ Gollin notes that "to implement DOO (disclosure of origin obligations) a country would need to pass national legislation amending patent laws, and promulgate regulations for the national patent office to follow". Gollin, M. (2005), *Feasibility of national disclosure of origin requirements*, WTO Public Symposium, April, page 1, at http://www.iprsonline.org/ictsd/docs/DOO3_Gollin.pdf.

¹² United Nations Environment Program, *Report of the Seventh Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing*, UNEP/CBD/WG-ABS/7/8, 5 May 2009, see <http://www.cbd.int/doc/?meeting=ABSWSG-07>.

Working Group on Access and Benefit Sharing: in Montreal from 9-15 November 2009 and in March 2010 at an unspecified venue.¹³

The draft negotiating text is heavily bracketed and reaching consensus will be difficult. It may be impossible. The draft text contains objectionable proposals such as retrospective revocation of patents; new border restrictions; payments to developing countries; a trust fund when origin is unclear; criminal penalties for non-disclosure; and inclusion of NGOs in dispute resolution procedures.

1.3 Proposals in WIPO

WIPO's Committee on the Protection of Traditional Knowledge and Genetic Resources has been considering for some time "technical matters concerning (a) defensive protection of genetic resources; (b) disclosure requirements in patent applications for information related to genetic resources used in the claimed invention; and (c) intellectual property issues in mutually agreed terms for the fair and equitable sharing of benefits arising from the use of genetic resources".¹⁴

Mirroring differences over the same issues in the WTO and CBD, little progress has been made because of substantial differences between developing and developed countries.¹⁵

At the October 2009 WIPO General Assemblies meeting, the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) agreed to undertake text-based negotiations that will eventually become an "international legal instrument (or instruments)" to

¹³ This meeting was to have been also held in Montreal.

¹⁴ WIPO, March 2006, *Brief Summary of Working Documents*, WIPO/GRTKF/IC/9/INF/3, para. 15.

¹⁵ The African Group has proposed talks on a legally binding international instrument on protection of genetic resources, traditional knowledge and folklore. Developed countries argued that deciding on a goal prior to beginning negotiations was unwise. Australia said it wanted the committee's mandate renewed, but it could not support the text proposed by the African Group. Brazil made it clear that it wants an internationally legally binding instrument. See WIPO (2009), *Draft Report of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore*, WIPO/GRTKF/IC/14/12 Prov,2, August 26, para 245.

“ensure the effective protection of” traditional knowledge, genetic resources and traditional cultural expressions (folklore). It has agreed a program of three inter sessional meetings over the next two years to produce an outcome.¹⁶

The documents from which it will work contain objectives and principles for the protection of [traditional cultural expressions and folklore](#) and of [traditional knowledge](#) and both contain annexes as well as a list of [“substantive issues on genetic resources”](#).¹⁷

This is an important development. It is logical that key definitions and concepts are agreed in WIPO, the leading IP multilateral body, rather than either the CBD, an environmental organization, or TRIPS, an agreement which looks at IP principally from trade related aspects.

¹⁶ Intellectual Property Watch, 3 October 2009 “Turning Point” At WIPO Pulls Traditional Knowledge Debate Out At Eleventh Hour at <http://www.ip-watch.org/weblog/2009/10/03/%E2%80%9Cturning-point%E2%80%9D-at-wipo-pulls-traditional-knowledge-debate-out-at-eleventh-hour/>

¹⁷ The Inter Governmental Committee on Intellectual Property, Genetic Resources, Traditional Knowledge and Folklore will “undertake negotiations with the objective of reaching agreement on a text of an international legal instrument (or instruments), which would ensure the effective protection of genetic resources (GRs), traditional knowledge (TK) and traditional cultural expressions (TCEs).” WIPO press release PR/20090/611, *WIPO Assemblies provide directions for next Biennium*, 1 October 2009.

Chapter 2: Access to Genetic Resource - Issues

2.1 The biopiracy debate

It is widely asserted that there is extensive “biopiracy” of the genetic material of developing countries. It is also claimed biopiracy is delivering super-normal profits to pharmaceutical companies without sufficiently compensating “owners” of genetic materials.

Previous research by the Australian APEC Study Centre revealed no instances of the forcible, illegal removal of genetic resources in any jurisdiction.¹⁸ It did not reveal substantial cases of biopiracy nor “any instance of highly profitable returns from a product developed via the acquisition of genetic resources from developing countries.”¹⁹ Those who coined the term made clear it was a political concept and others, like the Third World Network use it that way.²⁰ Increasingly, use of the term biopiracy is qualified.

A 2008 bibliography on ABS identifies only one substantive new article on biopiracy since the Australian APEC Centre report.²¹ That article, by Chen, concludes: “Most allegations of biopiracy are so thoroughly riddled with inconsistencies and outright lies that the entire genre, pending further clarification, must be consigned to the realm of “rural” legend.”²² Chen observes, moreover, that patents cited as evidence of biopiracy have been overturned when basic prerequisites for qualifying as a patent have not been satisfied. Chen recalls that “the European Patent Office revoked W.R.Grace’s patent on “Neemex”, a pesticide and insect repellent derived from...neem”.²³ He argues that “The

¹⁸ Oxley, A. and Bowen, B. (2005), ‘Developing an effective international regime for access and benefit sharing for genetic resources using market-based instruments’, The Australian APEC Study Centre, Monash University, see <http://www.apec.org.au/docs/051031%20-%20REPORT%20-%20CBD%20ABS.pdf>

¹⁹ Ibid., p. 6.

²⁰ The Third World Network refers to the ‘phenomenon of bio-piracy’ where corporations from developed countries patent genetic resources and knowledge for their profit. See www.twinside.org.sg/title/undp4.htm.

²¹ Williams, C, (2008), *Access and Benefit-Sharing Bibliography, July 2008*, Royal Botanic Gardens, Kew, United Kingdom. See <http://www.kew.org/conservation/access-benefit.pdf>

²² Chen, J. (2006), ‘There’s no such thing as biopiracy.... And it’s a good thing too’, *McGeorge Law Review* 37, p. 5.

²³ Ibid., p. 29.

fear that the Grace patent would deprive Indian villagers of the right to continue traditional uses of neem ... is purely scurrilous. Neem in its natural state is unpatentable.”²⁴

Bastuck reports that a US patent awarded in 1996 for the healing properties of turmeric was overturned in its entirety in 1998 on the grounds of prior art when the Indian Council for Scientific and Industrial Research appealed successfully against the patent.²⁵

Practical difficulties associated with giving effect to biopiracy were demonstrated in a document submitted in 2006 by Peru to WIPO.²⁶ It notes, there is insufficient information; documentary proof of use of the product in Peru was impossible; the same item was also found in Brazil, Colombia and Venezuela; and information was conveyed orally rather than in writing between generations.²⁷ In other words, proving the existence of biopiracy is in practice next to impossible – not least because there is no agreed definition.

Fowler concludes that “while most gene banks maintain databases including information on source countries of their material, few if any maintain information on the Country of Origin as defined by the CBD. Certainly, none would contain information on where the separate properties of each accession first arose”.²⁸

Two conclusions are warranted. First, claims about the nature and extent of biopiracy are not substantiated. There is neither an agreed definition of nor convincing evidence for biopiracy. Second, patents have been revoked on appeal if there is evidence they have been awarded incorrectly. Existing intellectual property arrangements governing patents are working well. There

²⁴ Ibid., p. 5.

²⁵ Bastuck, C. (2006), *'Biopiracy' and Patents – Developing Countries' Fears are Exaggerated*, p. 59.

²⁶ Government of Peru, 2006, World Intellectual Property Organization, *Analysis of Potential Cases of Biopiracy*, WIPO/GRTKF/IC/10.

²⁷ Ibid., pp. 3 and 6.

²⁸ Fowler, G. (2000), *Implementing access and benefit-sharing procedures under the Convention on Biological Diversity: The dilemma of crop genetic resources and their origin*, paper prepared for the Global Forum on Agricultural Research, Document GFAR/00/ 17-04-5-07, p. 5.

is no case for overturning these arrangements by introducing a legally binding instrument in the CBD.

2.2 What is a genetic resource?

The CBD describes a “genetic resource” as genetic material (any material of plant, animal, microbial or other origin containing functional units of heredity – i.e. genes) with actual or potential value.²⁹ There is, however, no agreed definition of genetic resources for use in a legally binding instrument.³⁰ This is essential if new rights relating to international law are struck in an international agreement.

The official report of the most recent CBD meeting on ABS issues noted that “There had been broad differences of opinion as to what constituted a genetic resource. After lengthy debate, it had been generally acknowledged that functionality should be considered the key factor in distinguishing between biological and genetic resources, the latter being characterized by the use of functional units of heredity.”³¹

One agricultural scientist has observed that genes are not specific.³² Research on the human genome has shown that genes are widely shared among all living things.

Until there is greater functional specificity of what should be regulated, current proposals hold out the prospect of a global system to regulate every transaction of any product containing genes. For a start this would mean regulation of every transfer of ownership of any agricultural product which contains a gene or derivative of a gene (every strand of DNA?) in any product or process to be patented.

²⁹ CBD, Article 2. See <http://www.cbd.int/convention/articles.shtml?a=cbd-02>.

³⁰ The meeting of the CBD Open-ended Ad hoc Working Group on Access and Benefit Sharing in April 2009 noted that “There had been broad differences of opinion as to what constituted a genetic resource”. CBD, *Report of the seventh meeting of the Ad Hoc Open Ended Working Group on Access and Benefit Sharing*, 5 May 2009, UNEP/CBD/WG-ABS/7/8, para 42.

³¹ UNEP/CBD/WG-ABS/7/8, para 42.

³² Hardon, J. (2004), cited in Stannard, C., van der Graff, N., Randell, A., Lallas, P. and Kenmore, P., “Agriculture biological diversity for food security: Shaping International Initiatives to help agriculture and the environment”, *Howard Law Journal*, v. 48, n. 1, pp. 397-430, Fall 2004, p. 411.

This does not seem practical. What principle warrants the overlaying of all commercial transactions of products containing genetic resources with such a system of regulation?

Finally, who is entitled to claim prior right of ownership of a genetic resource? Very few products can be claimed as belonging exclusively to any national jurisdiction.

2.3 National positions

Major advocates of proposals seeking changes to the CBD and TRIPs have introduced national 'disclosure of origin' laws. These laws³³ demonstrate that at least in the case of Brazil and India, there has been substantial tightening of their laws on disclosure requirements.³⁴

Brazil requires a declaration as to whether the subject matter of a patent application was obtained as a result of access to Brazilian genetic heritage and/or associated traditional knowledge. Failure to satisfy the duty of disclosure obligations results in nullity or suspension of patents.³⁵ Failure to satisfy pre-authorization requirements can result in seizure of end products, fines of up to \$US20 million or possible prison terms.³⁶ Pre-authorization is also required from the Genetic Heritage Management Committee. Access is only available to Brazilian entities or international joint ventures

³³ The following analysis of country positions has been derived from publicly available laws on disclosure of origin laws in the countries included in this section. To the best of the authors' knowledge, there is no single, published, source which provides an up to date analysis of national disclosure of origin laws, let alone an assessment of the economic implications of those laws for the proposed CBD Protocol.

³⁴ For an analysis of bioprospecting law and practice in a range of countries, see the Bioprospecting Information Resource, published by the UN University, UNEP and the Institute of Advanced Studies. See <http://www.bioprospector.org/bioprospector/antarctica/resources/LawResources.jsp;jsessionid=4242EBD15DE5EDF74A8648581DD6646E>.

³⁵ Intellectual Property Watch has noted that "Brazil has national legislation but it is not preventing 'biopiracy' from occurring, the government said. 'The problem is that many, mainly foreigners, do not ask for the authorisation and disrespect the legislation, which makes the international regime essential,' Adriana Tescari of the division of environment in the Ministry of External Relations told *Intellectual Property Watch*." Intellectual Property Watch (2006), 'Brazil Fights to Make Case for International Biodiversity Protection', 31 March, see <http://www.ip-watch.org/weblog/2006/05/31/brazil-fights-to-make-case-for-international-biodiversity-protection/>.

³⁶ Barreto, C. (2008), 'Biodiversity legislation globally and in Brazil', Powerpoint presentation, Fourth annual international symposium, Ahmedabad, India (google search; viewed 19 October, 2009).

coordinated by Brazilian entities.³⁷

India requires disclosure of the source and geographical origin of biological material used in an invention. The patent application is subject to challenge after publication up to one year after the grant. Indian law does not allow patents on plants and animals.³⁸ It is a criminal act under India's Biodiversity Act, punishable by fines or imprisonment, to apply for intellectual property rights in or outside India for any invention based on research of information on a biological resource from India without prior approval from the National Biodiversity Authority.³⁹

South Africa requires patent applicants to state whether the claimed invention is based on or derived from indigenous biological or genetic resources or traditional knowledge and whether co-owned by a local community or individual. If so, proof of authority to use the resource or knowledge must be submitted. No patent is granted unless this requirement is met.

The Andean Community (Bolivia, Colombia, Ecuador and Peru) requires national patent authorities to provide the registration and access contract if there is reason to believe that a genetic resource originated in a member country. Failure to comply results in revocation of patent rights or inability to obtain a patent.

³⁷ Intellectual Property Watch notes that "Brazil implemented disclosure of origin requirements into its national law (Provisional Act 2186-16) in 2001. As part of this it set up the Genetic Heritage Management Council under the Ministry of Environment as 'a regulatory and deliberate body, composed of representatives of federal government entities responsible for the various actions covered by this Provisional Act,' the law states. The law covers genetic resources as well as associated traditional knowledge, but has been criticized for not containing enough information about the indigenous communities as the 'rights holders,' one source said." Intellectual Property Watch (2006), see <http://www.ip-watch.org/weblog/2006/05/31/brazil-fights-to-make-case-for-international-biodiversity-protection/>. In other words, it is unclear whether Brazil is vesting property rights to genetic resources with its own local people.

³⁸ The effectiveness of Indian IP law has been questioned by Gupta, who has analyzed world patents on herbal products. He concludes that "Through the brand and trademark protections, Chinese medicine has created a niche, which Indian traditional medicines have failed to create in the world markets". Gupta, A. (2001), 'Do Patents Matter? WTO and Agriculture', Discussion paper, p. 2, see http://www.maharashtra.gov.in/english/signs/info_honeybee/wtogujcma.pdf

³⁹ For an analysis of the complexity of Indian bioprospecting law as it applies to indigenous knowledge, see Sahai, S., 'Indigenous Knowledge and its protection', article on the *Gene Campaign* website (viewed 21 October, 2009), see <http://www.genecampaign.org/Publication/Article/IK/IK-Potection.pdf>.

China requires disclosure of direct and original source of any genetic resources. If this cannot be provided, the applicant needs to specify the reasons. No patent is granted unless this requirement is met.

Costa Rica requires a certificate of origin and prior informed consent before granting patents involving components of biodiversity.

Denmark requires disclosure of geographical origin of biological material of animal or vegetable origin. But there are no sanctions for failure to comply. Belgium has a similar arrangement.

Norway requires disclosure of the providing country for biological material. Failure to comply does not affect processing of applications or validity of patent rights, but fines or imprisonment can apply.

Sweden specifies that the origin of the material should be included but there are no sanctions for breaches.

Three conclusions can be drawn from the foregoing.

First, Brazil and India have the most restrictive disclosure of information provisions in their laws.

Second, the laws of Belgium, Denmark, Norway, and Sweden are similar in that they require disclosure but impose no penalty for failure to comply and do not provide rights to object to applications.

Third, there has been a significant degree of compliance through national means of the general obligation in the CBD to provide for access and benefit sharing. (As the CBD notes, “Where national access and benefit-sharing laws existed, each country had the right to develop its own range of sanctions for breach within its own jurisdiction”.⁴⁰); and it demonstrates wide divergence among developed and developing countries in disclosure provisions in national laws.

⁴⁰ UNEP/CBD/WG-ABS/7/8, para 34.

This demonstrates both the difficulty of the task of devising a global, legally-binding instrument which encompasses such divergences. And it challenges proponents to demonstrate that such a legally binding instrument is a necessary or effective means to improve access and benefit sharing.

The diversity of national legislation suggests that an alternative option such as introducing national certificates of compliance, as proposed in Chapter 6, would be more practicable.

2.4 Certainty

Would a legally binding instrument in the CBD deliver certainty? There is no convincing public evidence that the lack of the proposed Protocol or TRIPS disclosure amendment is inhibiting bioprospecting. If anything, increased regulation of bioprospecting has served to deter it.

Negotiations on an ABS Protocol in the CBD have been underway since 2002. The prospect of securing consensus on an effective and implementable instrument by October 2010 is remote.

Were any convincing evidence to emerge that a lack of certainty is undermining bioprospecting, the appropriate response would be for countries to address uncertainty through amendments to national laws and regulations.

Chapter 3: The Importance of Innovation for Development

Innovation matters in developing countries. Intellectual property aims to promote intellectual creativity and innovation. This has delivered benefits to developing countries:

- biotechnology crops have increased incomes from \$US115 to \$US250 per hectare in developing countries;⁴¹ and
- more than 12 million resource-poor farmers benefited from biotechnology crops in 2008.⁴²

Sound IP law encourages owners of IP to market and distribute products in foreign markets and to invest. In both cases, valuable products and services are made available and contribute to expansion of economic growth and living standards.

Conversely, lack of IP law and law which does not protect innovation leads suppliers and investors not to seek to operate under such circumstances. This inhibits research and development.

The World Bank has noted that research and development investment delivered internal rates of return of 43 per cent in 700 research and development projects it had evaluated in all regions of the world.⁴³ These are very high rates of return. Research and development for agriculture is arguably even more important for developing than developed countries as agriculture is generally such a higher proportion of GDP in developing countries.

Developing countries are themselves increasingly becoming the holders of intellectual property. Those with a significant number of patents include: Argentina, Brazil, Chile, China, Colombia, Korea, Malaysia, Mexico, Pakistan, the Philippines, Singapore, South Africa and

⁴¹ Based on research in India, China, South Africa and the Philippines. International Service for the Acquisition of Agri-Biotech Applications (2009), *Biotech Crops Poised for Second Wave of Growth*, Brief 39-2008, press release, 11 February, see <http://www.isaaa.org/Resources/publications/briefs/39/pressrelease/default.html>.

⁴² Ibid.

⁴³ World Bank, *World Development Report 2008: Agriculture for Development*, Washington D.C., p. 14.

Thailand (see Annex B).

In some of these countries large numbers of patents are held by *residents* and already contributing to in-country innovation. Where patents in developing countries are held by non-residents, this signals foreign businesses have an interest in operating in the country. Foreign investors often require patent protection as a precursor to operating in that country.

If national intellectual property laws are non-existent or ineffective, or if regulation is too onerous or undermines the value of intellectual property, businesses (local and foreign) will stay away.

Developing countries would be better off promoting innovation and the increasing amount of intellectual property they themselves generate through strengthening national regimes that also facilitates access to and shares the benefits of biodiversity (see Chapter 6).

Chapter 4: Benefits and Costs to Developing Countries

It is automatically presumed that regulating to give effect legal effect to an ABS instrument and a disclosure obligation for patents will deliver benefits to developing countries. A review of the Benefits and Costs suggests otherwise. The costs are considerable.

4.1 “Green gold”?

The underlying concern of the proponents of disclosure is to ensure their nationals (or the State) secure the benefits from exploitation of genetic resources, to protect the reserves of “green gold”, as they are sometimes popularly described. While widely asserted as very commercially valuable, no efforts have been made to estimate the value of commercialization of each country’s genetic resources.⁴⁴

One measure is the level of commercial interest in bio-prospecting, the principal means of discovering valuable genetic resources. A Columbia University study a decade ago reported that “some pharmaceutical companies have recently cut back on their bio-prospecting activities because costs are higher than expected”. This lack of desire to maintain bio-prospecting springs from findings suggesting that, “no compound has been advanced into the commercialization phase” as of yet, no royalty or commercialization-derived monetary benefits have resulted from any of the agreements. The odds of finding a new drug from botanical samples are still very low (between 1/80,000 and 1/250,000 in plant samples).⁴⁵

⁴⁴ The best known example of a payment to engage in bioprospecting was Merck’s payments to Costa Rica. While no patentable drugs were developed, Costa Rica used the proceeds to improve its biodiversity – and thereby to help develop its ecotourism industry. See Gamez, R. (2007), ‘Ch. 7. The Link Between Biodiversity And Sustainable Development: Lessons From INBio’s Bioprospecting Program in Costa Rica’ in McManis, C. (ed.) *Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge*, Earthscan, London.

⁴⁵ Feinsilver, J. (1996) cited in Environmental Policy Studies Workshop (1999), ‘Access to Genetic Resources: An evaluation of the Development & Implementation of Recent Regulation and Access Agreements’, Columbia University School of International and Public Affairs, Environmental Policy Studies, Working Paper Number 4, 06/1999, see <http://www.biodiv.org/doc/case-studies/abs/cs-abs-agr-rpt.pdf>, p. 87. Evans-Illidge and Murphy

To apply the “green gold” analogy, there seems little evidence of a “gold rush”.⁴⁶ If there were, there would be thousands of applications for bioprospecting worldwide. There is however no evidence that bioprospecting is extensive.

4.2 Do indigenous peoples benefit?

Protection of traditional knowledge and the rights of indigenous peoples is now a leading objective of a new regime for Access and Benefit Sharing. It is argued that when a product is developed from a genetic resource which may be recognized in traditional knowledge, the owners of the traditional knowledge do not receive their due.

While often asserted, few cases demonstrate the problem is to secure a patent on an innovation of a genetic resource. Reviews of the cases cited commonly reveal that no initial property right to the genetic resource or related traditional knowledge has been provided, in the majority of cases by the country’s national administration.

There is recognition in some countries that the right indigenous peoples should be recognized when bioprospecting licences are issued. That is, the point at which a property right to whatever is discovered can be established, as well as a right to some subsequent benefit.

The total focus on securing a benefit from an intellectual property right and disregard of the importance of creation of an initial property right has meant the interests of Indigenous Peoples in the CBD discussions have been sidelined.

have reached a similar conclusion: “If access controlling agencies try to push the stakes even higher, industry will simply find alternative sources of chemical innovation for the bioproduct discovery process (e.g. combinatorial chemistry, microbial culture”. Evans-Illidge, E. and Murphy, P. (1999), ‘A New Approach to Benefit Sharing in Bioprospecting - Australia’, p. 6, on *CBD website, Accessing To Genetic Resources and Benefit-sharing, Case Studies*, see <http://www.cbd.int/doc/case-studies/abs/cs-abs-au.pdf>

⁴⁶ The Biological Industry Organization (BIO) has however issued comprehensive guidelines for its members on bioprospecting, see <http://www.bio.org/ip/international/200507guide.asp>.

4.3 Costs of a legally-binding ABS regime

Proponents of the legally-binding ABS Protocol and disclosure clause argue the proposals impose costs on the main users of the patent system - industrialized countries. This leaves developing countries, they argue, to benefit from ABS without wearing any cost. The benefits though are hard to identify. As illustrated above, research suggests there is declining interest in bioprospecting⁴⁷ and thereby in the “green bonanza”.⁴⁸ But the system imposes significant costs on developing countries.

4.3.1 How static and dynamic effects create costs

A legally binding ABS instrument would reduce incentives for innovation, as noted in Chapter 3. The result would be reduced spending on the development and approval of new patents. There would be **an initial, or static, reduction in the flow of new patents and technologies**. Costs for users of new patents and technologies, including germplasm, would be higher than they would otherwise have been. Value added to the economy would be lower, in turn reducing the value of output, exports, profits and jobs.

⁴⁷ Columbia University (1999), ‘Access to Genetic Resources: An Evaluation of the Development and Implementation of Recent Regulation and Access Agreements’, Columbia University School of International and Public Affairs, Environmental Policy Studies, Working Paper No. 4, p. 87. It is unclear whether this remains the case ten years later. No more recent evidence was found one way or the other whilst researching this paper. This may in part be attributable to the fact that companies engaged in bioprospecting remain tight-lipped before getting a patent for fear of losing any advantage. They may have concluded that given the low probability of developing a new drug patent from genetic material, the costs and benefits of engaging in bioprospecting do not meet the necessary rates of return and have resorted to laboratory trials.

⁴⁸ Abbott notes that the economic value of genetic resources is unclear: he points out that it is too early to assess the future economic benefits from the use of genetic resources “as this would involve predicting how these resources would be used or which alternatives may evolve”. See Intellectual Property Watch, 31 May 2006, quoting Professor Frederick Abbott of Florida State University College of Law. See <http://www.ip-watch.org/weblog/2006/05/31/brazil-fights-to-make-case-for-international-biodiversity-protection/>. The conclusions in this report and those of the report published by the Australian APEC Centre on the impacts on Australia’s agricultural, biotechnology and pharmaceutical industries, together with an apparent declining interest in bioprospecting and resort to the laboratory, suggest that it is unlikely the net present value of future bioprospecting benefits to developing countries will be substantial.

There will be further, dynamic, impacts.⁴⁹ Less innovation would result in fewer patent applications, approvals and deployment. A self-reinforcing cycle of lower economic benefits from the development and deployment of new innovations would set in. Less incentive and therefore lower investment would reduce output and jobs in industries that rely on access to continued improvements in technologies and germplasm. A self-reinforcing downward spiral (or a ‘CBD decelerator’), would set in.⁵⁰

4.3.2 Higher transaction and compliance costs

The costs of complying with obligations under a legally binding ABS regime would be considerable.⁵¹

4.3.3 Reduction in the value of intellectual property rights

The value of any intellectual property right is diminished if another party has a claim over the object of proprietary interest such as a lien or a right to secure a portion of those earnings derived from products based on the IP.

This will affect domestic holders of rights as much as foreigner holders. As developing countries grow, so too does the number of national owners of IP rights.

⁴⁹ See for example Hirshhorn, R. and Langford, J. (2001), ‘Intellectual Property Rights and Biotechnology: The Economic Argument’, paper prepared for The Canadian Biotechnology Advisory Committee Project Steering Committee on Intellectual Property Rights and the Patenting of Higher Life Forms, p.15 and footnotes 3 and 4. Their third and fourth footnotes, on p.23, are as follows: “Dynamic efficiency gains result from innovation and investment that increase productivity growth and help raise real income per capita over time”; and “Static efficiency requires that the economy’s resources are allocated to generate maximum social welfare. For static efficiency, product prices should be set to allow purchases to be made by all who place value on units of a good or service that exceeds its cost of production (i.e., marginal cost)”.

⁵⁰ A CBD decelerator would be the reverse of the well-known accelerator principle in economics. The accelerator principle describes the growth in output that induces continuing net investment. Net investment is a function of the *change* in output, not its level. A legally binding ABS instrument and/or a disclosure obligation in TRIPs would work in reverse. Output from agricultural, pharmaceutical and biotechnological industries in Australia would decline. Lower output would in turn lead to lower levels of investment – which would further reduce output via what could best be described as “the CBD decelerator”.

⁵¹ See Fowler, G. (2000), ‘Implementing access and benefit-sharing procedures under the Convention on Biological Diversity: The dilemma of crop genetic resources and their origin’, paper prepared for the Global Forum on Agricultural Research, Document GFAR/00/17-04-5-07, p.7.

Chapter 5: Impacts on Agriculture

For millennia humankind has depended on the exchange of crop species and varieties in agriculture to increase yield. Today, on average, 70 per cent of crops are derived from other geographic regions.⁵² The introduction of controls on those transactions as envisaged in proposals before the WTO and CBD would stifle this system of exchange and improvement in crops.

The administrative consequence of international regulation of access to genetic resources would be to delay access to that resource.

The transfer of every genetic resource and plant breeder right would have to be recorded and the terms confirmed. Were the conditions of transfer met (authentication of ownership, securing prior informed consent, and agreement on benefit sharing) verified the patent could be issued or a plant breeder right or a genetic resource released?

Patents and trademarks are extensive for food products. No patent could be provided on a food product or process until the legitimacy of ownership of the genetic material concerned was verified.

Such regulation has serious implications for the development and deployment of new and improved varieties of agricultural crops. This point has been made repeatedly by officials from the Food and Agriculture Organization (FAO) and International Union for the Protection of New Varieties of Plants (UPOV) at CBD meetings.

The 2009 Second World Seed Conference, held at FAO headquarters in Rome, concluded that “intellectual property protection is crucial for a sustainable

⁵² Commission on Genetic Resources for Food and Agriculture (2001), ‘Transaction Costs of Germplasm Exchange Under Bilateral Agreements’, *Background Study Paper No.14, Global Forum on Agriculture Research*, June, at <ftp://ext-ftp.fao.org/ag/cgrfa/BSP/bsp14e.pdf>

contribution of plant breeding and seed supply”.⁵³ To reverse the policies which have underpinned achievements such as these would be a mistake. The proposed requirements to authenticate ownership of genetic materials and obtain consent risk affecting agricultural yield and cost by reducing incentives and profitability from investing in the development and deployment of new plant varieties.⁵⁴

5.1 Poverty alleviation and production of food

Transparent and predictable intellectual property laws underpinned the “green revolution” of the mid-twentieth century.⁵⁵ The subsequent increases in agricultural productivity have helped lift hundreds of millions of people out of poverty.

The gains made in developing countries include:

- In 2007, global net economic benefits from biotechnology to crop farmers in developing countries were \$US6 billion.⁵⁶
- “In the 1980s and 1990s, improved varieties are estimated to have accounted for as much as 50 per cent of yield growth, compared with 21 per cent in the preceding two decades. Poor consumers have been the main beneficiaries.”⁵⁷ Without that growth in yield, world cereal prices would have been 18 to 21 per cent higher in 2000.⁵⁸

⁵³ Second World Seed Conference, 2009, *Conclusions*. See http://www.worldseedconference.org/en/worldseedconference/conference_conclusions_content---1--1323.html.

⁵⁴ Skovmand *et al.* have concluded that “Genetic improvement of wheat is likely to remain as a major source of productivity gains”. Skovmand, B., Rajaram, S., Ribaut, J-M. and Hede, A., *Wheat genetic Resources*, FAO Corporate Document Repository. See <http://www.fao.org/docrep/006/Y4011E/y4011e08.htm>.

⁵⁵ The green revolution allowed food production to keep pace with worldwide population growth. It refers to a transformation in agriculture that began in 1945. This began with work in Mexico and the establishment of an agricultural research station to develop more varieties of wheat. Mexico went from exporting half its wheat in 1943 to self-sufficiency in 1956. *Wikipedia*, “Green Revolution” (visited 21 October 2009).

⁵⁶ ISAAA (2009), *op. cit.*

⁵⁷ World Bank (2008), pp. 159 and 160, see http://siteresources.worldbank.org/INTWDR2008/Research/WDR_00_book.pdf.

⁵⁸ *Ibid.*

- Genetic improvements have ensured that global rice prices are 80 per cent lower than they would otherwise have been.⁵⁹

Yet despite those achievements, real investment in wheat has declined substantially since the late 1980s. Global agricultural yield growth is declining - from around 3 per cent per year in 1970 to just over 1 per cent per year in 2007.⁶⁰

The world cannot risk adverse outcomes in the CBD or TRIPS lowering research and development expenditure in agriculture when population growth and falling agricultural productivity yield growth requires that such investments are maximized.⁶¹ Costs would fall disproportionately on the poor in China, India and throughout Africa.

5.2 The risk of undermining key institutions

Commercial crops typically depend on few varieties. The capacity to access new plant varieties and gene pools is important for maintaining and improving the effectiveness of current breeds, such as when they are struck by disease or pests or new varieties need to be accessed or developed to increase productivity.⁶²

⁵⁹ Redona, E. (2004), 'Rice biotechnology for developing countries in Asia', NABC Report 16: Agriculture Biotechnology: Finding Common International Goals, *The National Agricultural Biotechnology Council*, p. 201, see http://nabc.cals.cornell.edu/pubs/nabc_16/talks/redona.pdf.

⁶⁰ Howden attributes this to a lack of investment in boosting genetics and management. Howden, M, CSIRO, *Climate change: Crop yields and distribution*, power point presentation to the 2008 Crawford Fund Annual Conference. See <http://www.crawfordfund.org/events/conference08.htm>. Similar conclusions have been reached by Dixon et al. Dixon, J, Hellin, J, Erenstein, and Kosina, P (2007), 'U-impact pathway for diagnosis and impact assessment of crop improvement', *Journal of Agricultural Science*, Vol. 145, Issue 3, June, pp. 195-206, p. 196.

⁶¹ Rajaram concludes that the current average wheat yield needs to increase from 2.5 to 4.2 tons per hectare if global demand for wheat in 2020 is to be met. Rajaram, S. (2005), 'Role of Conventional Breeding and Biotechnology in Future Wheat Production', *Turkish Journal of Agriculture and Forestry*, Vol. 29, p. 105. See <http://journals.tubitak.gov.tr/agriculture/issues/tar-05-29-2/tar-29-2-2-0404-1.pdf>.

⁶² Hoisington *et. al.* emphasise that to meet projected global food demand, "access to a range of genetic diversity is critical to the success of breeding programs. The global effort to assemble, document and utilize these resources is enormous and *the genetic diversity in the collections is critical to the world's fight against hunger* (our italics)". Hoisington, D., Khairallah, M., Reeves, T., Ribaut, J-M., Skovmand, B., Talba, S. and Warburton, M. (1999), 'Plant genetic resources: What can they contribute towards increased crop productivity', *Proceedings of the National Academy of Sciences*, Vol. 96, No. 11, pp. 5937-5943, Abstract.

Arrangements which required prior approval to access these important resources would impede food production worldwide. The roles of CGIAR, UPOV and the FAO Treaty on Genetic Resources would all be undermined.

5.2.1 Consultative Group on International Agricultural Research (CGIAR)

CGIAR centers specialize in research on particular crops. CGIAR holds six hundred thousand samples of major crops.⁶³ These research centers are vital public goods which have passed on to developing countries the benefits from improved agricultural varieties.⁶⁴ The CGIAR's Science Council concludes that "public investments in crop improvement research have ... given higher returns than most other public investments in rural areas."⁶⁵

Researchers can search these banks to locate disease resistant varieties from which to breed new varieties; as they did to replace potato varieties in Europe in the nineteenth century after the Irish potato famine, and varieties of peanuts in North America in the twentieth century when local varieties were wiped out by disease.

5.2.2 International Union for the Protection of New Varieties of Plants (UPOV)

The effectiveness of UPOV would also be diminished. Formed in 1961, UPOV administers a convention that allows for new varieties of plants to be protected (membership set out in Annex C).

⁶³ Stannard, C., van der Graff, N., Randell, A., Lallas, P. and Kenmore, P., 'Agriculture biological diversity for food security: Shaping International Initiatives to help agriculture and the environment', *Howard Law Journal*, Vol. 48, No. 1, pp. 397-430, Fall 2004, p. 404.

⁶⁴ Park and Ginarte conclude that intellectual property rights promote economic growth by "stimulating the accumulation of factor inputs like research and development and physical capital". Park, W. and Ginarte, C. (1997), 'Intellectual Property Rights and Economic Growth', *Contemporary Economic Policy*, Vol. XV, July, p. 60.

⁶⁵ CGIAR Science Council (2008), *An Assessment of the Impact of Agricultural Research in South East Asia since the Green Revolution*, p. 36. This report notes that "Even without including the CGIAR's other lines of research the estimated payoff already exceeds US\$1 billion each year, which is more than enough to cover the costs of the CGIAR's entire global program."

An analysis of the benefits delivered by UPOV concluded that after joining UPOV the number of varieties protected had increased significantly.⁶⁶ Production of soybean in Argentina increased by 350 percent and exports by 400 percent after it joined UPOV. In Kenya, exports of cut flowers increased by 240 percent.⁶⁷ These were important contributors to economic growth. Soplin and Muller conclude that implementation of UPOV “has been affective, in terms of the *number* of Standard Material Transfer Agreements (SMTA) which have been used to transfer plant genetic resource samples for food and agriculture (and the subsequent exchange of these resources)”.⁶⁸

The prior disclosure provisions proposed for TRIPs by India and Brazil would overlay the UPOV system with the requirement to demonstrate prior approval of the owners of genetic resources. New plant varieties draw on many other plant varieties. This is a natural feature of the science of plant breeding.

UPOV officials do not consider the system could function with such additional requirements. UPOV’s views as conveyed to the CBD are summarized in Annex E. It cautions that “the competent authority for the grant of the breeder’s rights is not in a position to verify whether the access to genetic material had taken place in accordance with the applicable law in this field”.⁶⁹

5.2.3 FAO International Treaty on Plant Genetic Resources for Food and Agriculture

The objective of the Treaty is the conservation and sustainable use of plant genetic resources for food and agriculture. Its primary mechanism is a multilateral system of access to agricultural genetic resources including information exchange, access to and transfer

⁶⁶ International Union for the Protection of New Varieties of Plants (2005), *UPOV Report on the Impact of Plant Variety Protection*.

⁶⁷ *Ibid.*, p. 90.

⁶⁸ Soplin and Muller (2009), p. 8.

⁶⁹ UPOV, *Access to Genetic Resources and Benefit Sharing*, para 10, p. 3. Link at <http://www.upov.int>.

of technology, capacity building, and sharing of benefits derived from commercialization.⁷⁰

Access to genetic resources provided for by the FAO Treaty would be impeded by requirements for formal approval to access to genetic resources under the proposals in the CBD ABS negotiations and in the CBD. The FAO's major concerns about the philosophy of managing genetic resources which underpins the approach of India and Brazil are expounded on in Annex F.

⁷⁰ This is evidence of a standard Material Access Transfer (MAT).

Chapter 6: An Effective Regime for Access and Benefit sharing

6.1 Criteria for an effective regime

An effective regime must:

- Reflect the realities of how genetic resources are being prospected and developed
- Enable each country to secure the benefits of its genetic resources
- Ensure indigenous peoples derive the benefits from use of their traditional knowledge and from access by others to genetic resources in their domain
- Recognize the diversity of approaches to prior disclosure in the national laws of parties
- Harmonize with, not alter or override, related international IP law
- Articulate a system of regulation which is commensurate with the dimension of the problem.
- Reflect the consensus among parties to the CBD.

6.2 Problems with a legally-binding regime on disclosure and control of genetic resources

The case for international regulation is not made. All international regulation is costly but the problem it aims to address – biopiracy – is not established as a significant problem.

This belies the fact that international regulation is extremely difficult to enforce and costly to administer and so is only justified when the benefits of the regulation outweigh the cost of administration. The

evidence in this and other reports published by the Australian APEC Centre suggests net economic costs would significantly outweigh any benefits from a legally binding ABS instrument in the CBD.

6.3 Key elements of an effective regime

A regime can be built from the following actions:

6.3.1 Strengthen the Bonn Guidelines

The Bonn Guidelines, adopted by CBD parties in 2002, are voluntary and intended to help countries draw up national access and benefit-sharing strategies and measures. They outline the roles and responsibilities of various players at the national and local levels in governing the use and transfer of genetic resources. They include suggestions for ways to put into practice principles like prior informed consent to ensure no genetic resources are developed without the consent of those who manage or control them.

The Guidelines are effective and could serve as a centerpiece of an Access and Benefit Sharing Regime.

6.3.2 Support development of sound approaches in international IP law towards Traditional Knowledge and Genetic Resources in WIPO

In October 2009, the WIPO Inter Governmental Committee (IGC) adopted a renewed mandate to address these issues and set out a two year timetable for that.

A vital task is to define traditional knowledge and genetic resources. This needs to be developed by IP experts, not officials specializing in environmental policy or international trade.

6.3.3 Strengthen domestic property rights

Insufficient control over genetic resources and traditional knowledge is, in a number of countries,

attributable to an absence of clearly defined and protected property rights.

Those with claims to genetic resources and traditional knowledge cannot lay a claim to the benefit from use of those materials or a derivative without first having a property right to them established in national law.

An earlier study by the Australian APEC Study Centre examines two case studies which include legal frameworks for bioprospecting from Costa Rica and the Australian state of Queensland;⁷¹ and sets out the main underpinnings of such a system.

The key elements include:

- a national policy on conservation of biodiversity that recognizes the role of property rights to genetic resources which:
 - allows for the exclusion of certain genetic materials from this system; and
 - allows for use of the system to protect biodiversity (for example by governments purchasing or allocating to itself rights to genetic resources and holding these rights).
- a definition of a contractual property right to bioprospect for genetic resources in a country;
- national laws that protect contracts exchanging rights to genetic resources; and
- a national policy on allocating property rights for bioprospecting;

⁷¹ Oxley and Bowen (2005).

This proposal received support from a range of developed and developing countries at ABS meetings in Grenada and Curitiba. Use of market-based instruments should be developed in more detail. The objective would be to enable developing countries to maximize the economic and environmental benefits to them from bioprospecting.⁷²

6.3.4 Issue national certificates of compliance

Countries could issue their own certificates of compliance certifying that the holder complies with national laws governing bioprospecting and ABS. In the case of authority to bioprospect, such certificates could be tradeable.⁷³ A CBD ABS regime could set common guidelines for these Certificates to follow.

If this were seen as an attractive option, a developed country which is at world's best practice with its ABS legislation, including for traditional knowledge, could consider designing a model national certificate of compliance – to demonstrate how such a system might operate.⁷⁴

The Biotechnology Industry Association and PhRMA argue that “private international law mechanisms including alternative dispute settlement resolution mechanisms and civil law regarding enforcement of foreign judgments can ensure effective compliance. In respect of foreign enforcement of judgments, however, it should be noted that CBD Parties have been generally

⁷² Such an option is of course also of interest to developed countries which want to develop their agricultural and mining endowments and thereby to deliver economic benefits to indigenous people.

⁷³ To maximize the economic benefits to developing countries from national certificate of compliance encouraging bioprospecting, there is an argument for making such certificates tradeable. Doing so would maximize the prospect of a proper market price being identified for bioprospecting rights. As long as the buyer of the right to engage in bioprospecting accords with the national laws of the country issuing the certificate, why should a developing country prevent an entity holding a certificate of compliance to sell it to another entity? Also see Oxley and Bowen (2005), pp. 36 to 47.

⁷⁴ Australia is arguably best placed to develop a model national certificate of compliance.

reluctant to recognize judgments from other jurisdictions".⁷⁵

6.3.5 Develop voluntary industry codes of conduct

Voluntary industry codes of conduct could be developed. The Biotechnology Industry Association and PhRMA have proposed "Codes of conduct for important groups and identification of best practice codes of conduct". They propose voluntary industry codes be established "by an industry association or group of non-commercial entities representing users of genetic resources with participation by industry and/or other relevant actors."⁷⁶ Voluntary industry codes of conduct are a well established component of international agreements.⁷⁷ Any voluntary code of conduct should be consistent with what industry has proposed.⁷⁸

6.3.6 Strengthen the capacity of national regimes

There are no obvious limitations on the use of national regimes to underpin and encourage bioprospecting and access and benefit sharing. If the capacity to implement national regimes requires enhancement, there is no reason why technical assistance could not be provided. The Biotechnology Organization and PhRMA, for example, have proposed that such capacity building be "implemented through activities coordinated through appropriate intergovernmental organizations⁷⁹ and other forms of voluntary assistance".⁸⁰

⁷⁵ BIO and PhRMA (2009), p. 6.

⁷⁶ BIO and PhRMA (2009), p. 7.

⁷⁷ Gollin, for example, concludes that direct disclosure of origin obligations "may be more problematic than indirect or voluntary approaches". Gollin (2005), p. 1.

⁷⁸ The Biotechnology Industry Association has issued guidelines for BIO members engaging in bioprospecting. On any reasonable assessment, these guidelines strike a very reasonable balance between the interests of developing countries in maximising the economic benefits from bioprospecting as well as the interests of potential bioprospecting entities in finding and developing new products from genetic resources. See <http://www.bio.org/ip/international/200507guide.asp>.

⁷⁹ Bilateral aid donors would need to be convinced there is a development dividend from providing such assistance.

⁸⁰ BIO and PhRMA (2009), 'Views And Proposals of the Biotechnology Organization and the Pharmaceutical Research and Manufacturers of America (PhRMA)' for the *Eighth Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit Sharing*, July, p. 13. See <http://www.bio.org/letters/20090731.pdf>.

Conclusions

There is no case to weaken important multilateral trade law or to diminish the effectiveness of multilateral arrangements to support agricultural development and innovation. Yet that would be the effect of a legally-binding ABS instrument in the CBD or a disclosure obligation in TRIPS.

This report demonstrates that any benefits Brazil and India might secure would be substantially outweighed by the costs of administering such a system. This would diminish growth opportunities in developing countries.

Access to, and sharing the benefits of the use of, genetic resources can be improved. Measures which will achieve that are set out in this report and represent components that would serve as the basis for an effective Regime.

Such a regime could be created by the CBD's October 2010 deadline if that approach were followed. If members of the CBD continue to insist that the only effective regime must be a legally-binding instrument that weakens important multilateral arrangements, that deadline will not be met.

Annex A: Convention on Biological Diversity

CBD, Article 15

Article 15 of the Convention on Biodiversity sets general obligations of parties to the Convention to facilitate access to and benefit sharing from use of genetic resources.

Article 15. Access to Genetic Resources

1. Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.
2. Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention.
3. For the purpose of this Convention, the genetic resources being provided by a Contracting Party, as referred to in this Article and Articles 16 and 19, are only those that are provided by Contracting Parties that are countries of origin of such resources or by the Parties that have acquired the genetic resources in accordance with this Convention.
4. Access, where granted, shall be on mutually agreed terms and subject to the provisions of this Article.
5. Access to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party.
6. Each Contracting Party shall endeavour to develop and carry out scientific research based on genetic resources provided by other Contracting Parties with the full participation of, and where possible in, such Contracting Parties.
7. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with Articles 16 and 19 and, where necessary, through the financial mechanism established by Articles 20 and 21 with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms.

CBD draft negotiating text:

See United Nations Environment Program, *Report of the Seventh Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing*, UNEP/CBD/WG-ABS/7/8, 5 May 2009, <http://www.cbd.int/doc/?meeting=ABSWG-07>.

Annex B – Domestic Patents by Country

Country	Titles in Force, 2004 ^a	Titles Granted from 1985-2004 ^b		Total grants of patents in the USPTO by country of origin		
		Residents	Non-Residents	Total	Total ^c	Biotechnology ^c
Argentina	N/A	4,297	15,910	20,207	675	13
Australia	96,673	12,470	121,191	133,661	12,142	638
Barbados	N/A	N/A	N/A	N/A	N/A	N/A
Bolivia	N/A	24	145	169	N/A	N/A
Brazil	N/A	7,029	32,746	39,775	1407	40
Canada	146,017	20,557	208,916	229,473	50,298	1,903
Chile	N/A	452	4,723	5,175	167	6
China	N/A	35,384	46,463	81,847	2,881	82
Colombia	N/A	604	5,899	6,503	135	7
Costa Rica	N/A	24	36	60	60	3
Guatemala	N/A	59	794	853	24	2
Indonesia,	N/A	21	677	698	100	0
Korea	331,437	271,025	135,037	406,062	3,773	356
Malaysia	7,044	154	8,091	8,245	505	7
Mexico	38,372	3,079	49,936	53,015	1,218	41
New Zealand	14,078	4,561	39,364	43,925	1,664	85
The Netherlands	N/A	18,833	20,366	39,199	21,290	850
Pakistan	N/A	130	3,650	3,780	27	1
Paraguay	N/A	7	130	137	N/A	N/A
The Philippines	N/A	220	7,474	7,694	193	3
Singapore	39,507	863	10,550	11,413	2,878	51
South Africa	N/A	2,748	4,020	6,768	2,231	30
Thailand	N/A	429	4,525	4,954	251	6
United States of America	1,633,355	1,236,187	959,170	2,195,357	1,309,213	42,988
Uruguay	522	172	1,346	1,518	30	2

Notes:

^a Statistics for Singapore from the Intellectual Property Office of Singapore, Malaysia from the Intellectual Property Corporation of Malaysia

^b Applications to domestic offices

^c for years available

N/A – Not Available

Sources:

“Titles in Force, 2004” Statistics

1. Industrial Patents in Force under national regimes – “Patents in Force (2004)”, World Intellectual Property Organisation (WIPO), <http://www.wipo.int/ipstats/en/statistics/patents/inforce/source.html>, cited 11/05/2006;

2. Malaysian Statistics sourced from the Intellectual Property Corporation of Malaysia Statistics by email;

3. Singaporean Statistics sourced from “No of patents in force in Singapore”, Intellectual Property Office of Singapore”; [Thhttp://www.ipos.gov.sg/main/aboutus/factsfigures/patentstats/patentinforce.html](http://www.ipos.gov.sg/main/aboutus/factsfigures/patentstats/patentinforce.html), cited 12/05/2006;

“Titles Granted from 1985 – 2004 (for years available)” Statistics

1. “Patents Granted by Office, 1985 – 2004”, World Intellectual Property Organisation (WIPO),
http://www.wipo.int/ipstats/en/statistics/patents/source/granted_national_table.csv

“Total grants of patents in the USPTO by county of origin of patent” Statistics

1. Total grants of patents in the USPTO by country of origin of patent data from the OECD Patent Database

Annex C – Members of the International Union for the Protection of New Varieties of Plants (UPOV)

Status on May 12, 2009.

State / Organisation	Date on which State / Organisation became a member of UPOV	Number of contributions on units	¹ Latest Act of the Convention to which State / Organisation is party	Date on which State / Organisation became party to that Act
Albania	15 Oct 2005	0.2	1991 Act	15 Oct 2005
Argentina	25 Dec 1994	0.5	1978 Act	25 Dec 1994
Australia	01 Mar 1989	1.0	1991 Act	20 Jan 2000
Austria	14 Jul 1994	1.5	1991 Act	01 Jul 2004
Azerbaijan	09 Dec 2004	0.2	1991 Act	09 Dec 2004
Belarus	05 Jan 2003	0.1	1991 Act	05 Jan 2003
Belgium ²	05 Dec 1976	1.5	1961 / 1972 Act	05 Dec 1976
Bolivia	21 May 1999	0.2	1978 Act	21 May 1999
Brazil	23 May 1999	0.25	1978 Act	23 May 1999
Bulgaria	24 Apr 1998	0.2	1991 Act	24 Apr 1998
Canada	04 Mar 1991	1.0	1978 Act	04 Mar 1991
Chile	05 Jan 1996	0.2	1978 Act	05 Jan 1996
China	23 Apr 1999	0.5	1978 Act ³	23 Apr 1999
Colombia	13 Sep 1996	0.2	1978 Act	13 Sep 1996
Costa Rica	12 Jan 2009	0.2	1991 Act	12 Jan 2009
Croatia	01 Sep 2001	0.2	1991 Act	01 Sep 2001
Czech Republic	01 Jan 1993	0.5	1991 Act	24 Nov 2002
Dominican Republic	16 Jan 2007	0.2	1991 Act	16 Jan 2007
Denmark ⁴	06 Dec 1968	1.5	1991 Act	24 Apr 1998
Ecuador	08 Aug 1997	0.2	1978 Act	08 Aug 1997
Estonia	24 Sep 2000	0.2	1991 Act	24 Sep 2000
European Community	29 Jul 2005	5.0	1991 Act	29 Jul 2005
Finland	16 Apr 1993	1.0	1991 Act	20 Jul 2001
France ⁵	03 Oct 1971	5.0	1978 Act	17 Mar 1983
Georgia	29 Nov 2008	0.2	1991 Act	29 Nov 2008
Germany	10 Aug 1968	5.0	1991 Act	25 Jul 1998
Hungary	16 Apr 1983	0.5	1991 Act	01 Jan 2003

Iceland	03 May 2006	0.2	1991 Act	03 May 2006
Ireland	08 Nov 1981	1.0	1978 Act	08 Nov 1981
Israel	12 Dec 1979	0.5	1991 Act	24 Apr 1998
Italy	01 Jul 1977	2.0	1978 Act	28 May 1986
Japan	03 Sep 1982	5.0	1991 Act	24 Dec 1998
Jordan	24 Oct 2004	0.2	1991 Act	24 Oct 2004
Kenya	13 May 1999	0.2	1978 Act	13 May 1999
Kyrgyzstan	26 Jun 2000	0.2	1991 Act	26 Jun 2000
Latvia	30 Aug 2002	0.2	1991 Act	30 Aug 2002
Lithuania	19 Dec 2003	0.2	1991 Act	19 Dec 2003
Mexico	09 Aug 1997	0.75	1978 Act	09 Aug 1997
Morocco	8 Oct 2006	0.2	1991 Act	8 Oct 2006
Netherlands	10 Aug 1968	3.0	1991 Act ⁶	24 Apr 1998
New Zealand	08 Nov 1981	1.0	1978 Act	08 Nov 1981
Nicaragua	06 Sep 2001	0.2	1978 Act	06 Sep 2001
Norway	13 Sep 1993	1.0	1978 Act	13 Sep 1993
Panama	23 May 1999	0.2	1978 Act	23 May 1999
Paraguay	08 Feb 1997	0.2	1978 Act	08 Feb 1997
Poland	11 Nov 1989	0.5	1991 Act	15 Aug 2003
Portugal	14 Oct 1995	0.5	1978 Act	14 Oct 1995
Republic of Korea	07 Jan 2002	0.75	1991 Act	07 Jan 2002
Republic of Moldova	28 Oct 1998	0.2	1991 Act	28 Oct 1998
Romania	16 Mar 2001	0.2	1991 Act	16 Mar 2001
Russian Federation	24 Apr 1998	0.5	1991 Act	24 Apr 1998
Singapore	30 Jul 2004	0.2	1991 Act	30 Jul 2004
Slovakia	01 Jan 1993	0.5	1978 Act	01 Jan 1993
Slovenia	29 Jul 1999	0.2	1991 Act	29 Jul 1999
South Africa	06 Nov 1977	1.0	1978 Act	08 Nov 1981
Spain	18 May 1980	2.0	1961 / 1972 Act	18 May 1980
Sweden	17 Dec 1971	1.5	1991 Act	24 Apr 1998
Switzerland	10 Jul 1977	1.5	1978 Act	08 Nov 1981
Trinidad and Tobago	30 Jan 1998	0.2	1978 Act	30 Jan 1998
Tunisia	31 Aug 2003	0.2	1991 Act	31 Aug 2003
Ukraine	03 Nov 1995	0.2	1978 Act	03 Nov 1995
United Kingdom	10 Aug 1968	2.0	1991 Act	03 Jan 1999
United States of America	08 Nov 1981	5.0	1991 Act ⁷	22 Feb 1999
Uruguay	13 Nov 1994	0.2	1978 Act	13 Nov 1994
Uzbekistan	14 Nov 2004	0.2	1991 Act	14 Nov 2004
Viet Nam	24 Dec 2006	0.2	1991 Act	24 Dec 2006

Notes:

¹ “1961/1972 Act” means the International Convention for the Protection of New Varieties of Plants of December 2, 1961, as amended by the Additional Act of November 10, 1972; “1978 Act” means the Act of October 23, 1978, of the Convention; “1991 Act” means the Act of March 19, 1991, of the Convention.

² With a notification under Article 34(2) of the 1978 Act.

³ With a declaration that the 1978 Act is not applicable to the Hong Kong Special Administrative Region.

⁴ With a declaration that the Convention of 1961, the Additional Act of 1972, the 1978 Act and the 1991 Act are not applicable to Greenland and the Faroe Islands.

⁵ With a declaration that the 1978 Act applies to the territory of the French Republic, including the Overseas Departments and Territories.

⁶ Ratification for the Kingdom in Europe.

⁷ With a reservation pursuant to Article 35(2) of the 1991 Act.

Source:

The International Union for the Protection of New Varieties of Plants,
<http://www.upov.int/export/sites/upov/en/about/members/pdf/pub423.pdf>

Annex D – Domestic Plant Variety Protection by Country or Group

Country	Titles in Force, end 2007
Argentina	1,276
Australia	2,128
Barbados	N/A
Bolivia	27
Brazil	1,076
Canada	1,803
Chile	529
China	1,475
Colombia	325
Costa Rica	N/A
Guatemala	N/A
Indonesia	N/A
Korea	1,932
Malaysia	N/A
Mexico	376
The Netherlands	3,921
New Zealand	1,299
Pakistan	N/A
Paraguay ¹	168
The Philippines	N/A
Singapore ²	0
South Africa	1,950
Thailand	N/A
United States of America ^{3,4}	16,100
Uruguay	247

Notes:

¹ 2003 Statistic

² Joined UPOV in July 2004

³ Under the Plant Variety Protection Act

⁴ Under the Plant Patent Act

N/A – Not Available

Sources:

1. Plant Breeder's Rights Patents in Force under national regimes – "Plant Variety Protection Statistics for the Period 2000-2004", International Union for the Protection of New Varieties of Plants (UPOV), http://www.upov.int/export/sites/upov/en/documents/c/42/c_42_07.pdf

Annex E – UPOV’s position on Access and Benefit Sharing of Genetic Resources

The following is drawn from the UPOV submission to the CBD.⁸¹

UPOV considers that plant breeding is essential for sustainable use & development of Genetic Resources and that access to Genetic Resources is a key to sustainable and substantial progress in plant breeding.

The ‘breeder’s exemption’ (in UPOV convention) where acts done with the purpose of breeding other varieties are not subject to restriction, reflects UPOV’s view that worldwide breeders need access to all forms of breeding material to maximize progress and use of Genetic Resources for Society. The ‘breeder’s exemption’ also provides inherent benefit-sharing principles, and UPOV is concerned at any other measures for benefit-sharing which could introduce unnecessary barriers in breeding progress & use of genetic resources. There are certain measures under consideration in the international regime for ABS of genetic resources which are contrary to the UPOV convention. As it is vital the CBD and UPOV convention are mutually supportive, UPOV recommends that any international regime on ABS of genetic resources should be established in harmony with the UPOV Convention.

Notification

UPOV’s approach to notification (i.e. disclosure of origin/source/legal provenance of Genetic Resources and associated TK in relation to IP) states:

- the UPOV Convention will only protect new varieties if ‘distinctness’ has been proven;
- Breeders are required to provide breeding history information, and encouraged to provide information of the origin of plant material. However, this could not be acceptable as an additional condition as it is not in line with what the UPOV convention already provides, and the convention does not allow for further or different conditions (i.e. for technical reasons this condition may prove impossible); and

⁸¹ Executive Secretary of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing, “Compilation of submissions provided by parties, governments, international organizations, indigenous and local communities and relevant stakeholders in preparation for the Third Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing”, Convention on Biological Diversity, UNEP/CBD/WG-ABS/3/INF/1, 08/12/2004, p.104.

- If a 'disclosure of origin' mechanism was introduced it should not cover plant variety protection.

Prior informed Consent

UPOV encourages application of the principles of transparency & ethical behaviour when breeding. Access to genetic material should pay respect to the legal framework of the country of origin. However, Prior Informed Consent cannot be an additional condition to providing Protection of Plant Varieties as the UPOV convention requires that a breeder's right should not be subject to any further or different conditions for protection. This is consistent with Article 15 of the CBD which requires measures undertaken pursuant to the CBD to be consistent with measure to protect intellectual property.

Benefit Sharing

UPOV's approach to benefit sharing:

- UPOV supports mutual supportiveness between the CBD, UPOV and other relevant IP instruments;
- Legislation dealing with genetic material and the legislation dealing with breeder's rights should be in separate but compatible instruments because of their different scope; and
- Benefit sharing should be mutually supportive and respect UPOV's PVP system, especially the provision for breeder's exemption.
- UPOV opposes any mechanism to share revenues, as it would impose an additional administrative burden on UPOV and an additional financial obligation on the breeder where varieties were used for further breeding. This would be incompatible with breeder's exemption established in the UPOV convention, and instead of creating incentives to develop new varieties, may provoke the opposite effect whereby breeders would not develop new varieties nor seek protection;⁸²
- Under the UPOV Convention, subsistence farmers are excluded from breeder's rights, and so, freely benefit from the protection of new varieties.

⁸² This is also recognized by the FAO in the International Treaty on Plant Genetic Resources for Food and Agriculture in Article 13.2. (d) (ii) in that breeders are excepted from financial benefit sharing whenever their products are 'available without restriction to others for further research and breeding' .

Annex F – The FAO and Agricultural Biodiversity

FAO pointed out that in Decision II/15; the CBD recognized the “special nature of agricultural biodiversity, its distinctive features, and problems needing distinctive solutions”.⁸³

The FAO established a Commission on Genetic Resources for Food and Agriculture was established in 1983. In 1995 its mandate was extended to cover all components of biodiversity related to food & agriculture. Its statutes provide that it will:

- Co-ordinate and deal with policy related to conservation & sustainable use of genetic resources related to food & agriculture;
- Provide inter-government forum for negotiation, and to oversee development, codes of conduct of any other instruments appropriate to genetic resources relating to food & agriculture; and
- Facilitate & oversee cooperation between the FAO & other international government & non-government bodies dealing with conservation & sustainable use of genetic resources related to agriculture & food. (This is in the case of the CBD, the WTO TRIPs⁸⁴, and WIPO).

The FAO Commission facilitated the International Treaty on Plant genetic Resources for Food & Agriculture. It was adopted by the FAO conference in 2001. The objective of the Treaty is the conservation and sustainable use of plant genetic resources for food and agriculture and a fair and equitable sharing of benefits arising from their use in harmony. It creates a multilateral system of Access and Benefit Sharing through exchanges of information, access to and transfer of technology, capacity-building, and sharing of benefits derived from commercialization.⁸⁵ A key feature is establishment of an international network of gene banks of agricultural genetic resources.

It facilitates the flow of benefits to all farmers in all countries, specifically developing nations

⁸³ Conference of the Parties to the Convention on Biological Diversity, “Report of the Fifth Meeting of the Conference of the Parties to the Convention on Biological Diversity”, Convention on Biological Diversity, UNEP/CBD/COP/5/23, 22/06/2000.

⁸⁴ The most pertinent Article in the WTO TRIPs Agreement is Article 27: “members may also exclude from patentability...plants & animals other than micro-organisms, and essential biological processes for the production of plants or animals other than non-biological and microbiological processes. However members may provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof.”

⁸⁵ This is evidence of a standard Material Access Transfer (MAT).

The FAO set out its views on genetic resources and protection of biodiversity as they related to food and agriculture in a submission to the Fourth meeting of the Ad Hoc Open Access Working Group Working Group of the CBD on Access and Benefit Sharing.⁸⁶

It pointed out there were special features about agricultural genetic resources which needed to be taken into account when biodiversity was to be managed. Agricultural Biodiversity is essential to satisfy basic human needs for food and livelihood. Conservation was accordingly linked to sustainable use. If agricultural genetic resources are conserved but not utilized, the world cannot be fed. If utilization is not efficient, there will not effective access to agricultural genetic, efficient use of resources by farmers, nor adequate increases in the range and quality of agricultural genetic resources.

In support of this Stannard argues that in case of agricultural genetic resources, intra-specific diversity (diversity within species of crops and domestic animals) is at least as important as inter-specific diversity (diversity among species). Intra-specific diversity results from incremental improvement of crops or animal breeds through crossing and selection from a wide range of sources to improve varieties. Samples of genetic resources infrequently provide large-scale appropriable benefits, and it is impossible to identify the parent varieties, origins of genes, and relative value in the finished variety. These factors illustrate the special nature of agricultural biodiversity and should be paramount in developing policies on Access and Benefit Sharing³⁵.

The FAO observed that development of an International ABS regime should recognize the role of the FAO Commission on Genetics to ensure that it moves in a direction which supports the special needs of the agricultural sector.

On the proposed international regime on Access to Genetic Resources and Benefit-Sharing for the CBD, FAO proposed that the CDB should recognise the role of the International Treaty on Plant Genetic Resources for Food and Agriculture, not include language 'defining' scope of the regime; provide for the potential development of farm animal genetic resources; and, if appropriate, exclude that FAO Treaty from its coverage.

On the question of disclosure of origin of genetic resources in applications for intellectual property rights (including the proposed international certificates of origin/source/legal provenance), the FAO noted that the International Treaty provides for a multilateral system of Access and Benefit Sharing. Where disclosure of origin (or international certificate of origin/source/legal provenance) relates to plant genetic resources for food and agriculture obtained through the FAO Multilateral System, the system should be identified as the origin/source/legal provenance of that material.

⁸⁶ CBD, UNEP/CBD/WG-ABS/4/INF/3, p. 43.

References

- Barreto, C. (2008), 'Biodiversity legislation globally and in Brazil', Powerpoint presentation, Fourth annual international symposium, Ahmedabad, India.
- Bastuck, C. (2006), '*Biopiracy' and Patents – Developing Countries' Fears are Exaggerated.*
- BIO and PhRMA (2009), 'Views And Proposals of the Biotechnology Organization and the Pharmaceutical Research and Manufacturers of America (PhRMA)' for the *Eighth Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit Sharing*, July.
- CBD, *Report of the seventh meeting of the Ad Hoc Open Ended Working Group on Access and Benefit Sharing*, 5 May 2009, UNEP/CBD/WG-ABS/7/8.
- CGIAR Science Council (2008), *An Assessment of the Impact of Agricultural Research in South East Asia since the Green Revolution.*
- Chen, J. (2006), 'There's no such thing as biopiracy And it's a good thing too', *McGeorge Law Review* 37.
- Columbia University (1999), 'Access to Genetic Resources: An Evaluation of the Development and Implementation of Recent Regulation and Access Agreements', Columbia University School of International and Public Affairs, Environmental Policy Studies, Working Paper No. 4.
- Commission on Genetic Resources for Food and Agriculture (2001), 'Transaction Costs of Germplasm Exchange Under Bilateral Agreements', *Background Study Paper No.14, Global Forum on Agriculture Research*, June.
- Convention on Biological Diversity (2004), 'Compilation of submissions provided by parties, governments, international organizations, indigenous and local communities and relevant stakeholders in preparation for the Third Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing', UNEP/CBD/WG-ABS/3/INF/1, 08/12/2004.
- Convention on Biological Diversity (2000), 'Report of the Fifth Meeting of the Conference of the Parties to the Convention on Biological Diversity', UNEP/CBD/COP/5/23, 22/06/2000.
- Dixon, J, Hellin, J, Erenstein, and Kosina, P (2007), 'U-impact pathway for diagnosis and impact assessment of crop improvement', *Journal of Agricultural Science*, Vol. 145, Issue 3 , June, pp. 195-206.

Evans-Illidge, E. and Murphy, P. (1999), 'A New Approach to Benefit Sharing in Bioprospecting - Australia', p. 6, on *CBD website, Accessing To Genetic Resources and Benefit-sharing, Case Studies*.

Feinsilver, J. (1996) cited in Environmental Policy Studies Workshop (1999), 'Access to Genetic Resources: An evaluation of the Development & Implementation of Recent Regulation and Access Agreements', Columbia University School of International and Public Affairs, Environmental Policy Studies, Working Paper Number 4, 06/1999

Fowler, G. (2000), *Implementing access and benefit-sharing procedures under the Convention on Biological Diversity: The dilemma of crop genetic resources and their origin*, paper prepared for the Global Forum on Agricultural Research, Document GFAR/00/ 17-04-5-07.

Gamez, R. (2007), 'Ch. 7. The Link Between Biodiversity And Sustainable Development: Lessons From INBio's Bioprospecting Program in Costa Rica' in McManis, C. (ed.) *Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge*, Earthscan, London.

Gollin, M. (2005), *Feasibility of national disclosure of origin requirements*, WTO Public Symposium, April.

Gupta, A. (2001), 'Do Patents Matter? WTO and Agriculture', Discussion paper.

Hardon, J. (2004), cited in Stannard, C., van der Graff, N., Randell, A., Lallas, P. and Kenmore, P., 'Agriculture biological diversity for food security: Shaping International Initiatives to help agriculture and the environment', *Howard Law Journal*, v. 48, n. 1, pp. 397-430, Fall 2004.

Hirshhorn, R. and Langford, J. (2001), 'Intellectual Property Rights and Biotechnology: The Economic Argument', paper prepared for The Canadian Biotechnology Advisory Committee Project Steering Committee on Intellectual Property Rights and the Patenting of Higher Life Forms.

Hoisington, D., Khairallah, M., Reeves, T., Ribaut, J-M., Skovmand, B., Talba, S. and Warburton, M. (1999), 'Plant genetic resources: What can they contribute towards increased crop productivity', *Proceedings of the National Academy of Sciences*, Vol. 96, No. 11, pp. 5937-5943, Abstract.

Howden, M. (2008), 'Climate change: Crop yields and distribution', Power point presentation by the Australian Commonwealth Science and Industrial Research Organisation to the 2008 Crawford Fund Annual Conference.

Intellectual Property Watch (2009), 'Fate Of Traditional Knowledge A Key Decision At WIPO Assemblies', 22 September.

Intellectual Property Watch (2009), “Turning Point” At WIPO Pulls Traditional Knowledge Debate Out At Eleventh Hour’, 3 October.

Intellectual Property Watch (2006), ‘Brazil Fights to Make Case for International Biodiversity Protection’, 31 March.

International Service for the Acquisition of Agri-Biotech Applications (2009), *Biotech Crops Poised for Second Wave of Growth*, Brief 39-2008.

International Union for the Protection of New Varieties of Plants (2005), *UPOV Report on the Impact of Plant Variety Protection*.

Maras, C., Smale, M. and Singh, R. (2003), ‘The economic impact in developing countries of leaf rust resistance breeding in CIMMYT-related spring bread wheat’, *CIMMYT Economic Program Paper*, 04-01.

Oxley, A. and Bowen, B. (2005), ‘Developing an effective international regime for access and benefit sharing for genetic resources using market-based instruments’, The Australian APEC Study Centre, Monash University.

Park, W. and Ginarte, C. (1997), ‘Intellectual Property Rights and Economic Growth’, *Contemporary Economic Policy*, Vol. XV, July, p. 60.

Rajaram, S. (2005), ‘Role of Conventional Breeding and Biotechnology in Future Wheat Production’, *Turkish Journal of Agriculture and Forestry*, Vol. 29, p. 105.

Redona, E. (2004), ‘Rice biotechnology for developing countries in Asia’, NABC Report 16: Agriculture Biotechnology: Finding Common International Goals, *The National Agricultural Biotechnology Council*.

Skovmand, B., Rajaram, S., Ribaut, J-M. and Hede, A., *Wheat genetic Resources*, FAO Corporate Document Repository.

Soplin, S. and Muller, M. (2009), *The Development of an International Regime on Access to Genetic Resources and Fair and Equitable Benefit Sharing in a Context of New Technological Developments*, Initiative for the Prevention of Biopiracy, Year IV No. 10, April.

Stannard, C., van der Graff, N., Randell, A., Lallas, P. and Kenmore, P. (2004), ‘Agriculture biological diversity for food security: Shaping International Initiatives to help agriculture and the environment’, *Howard Law Journal*, Vol. 48, No. 1, pp. 397-430.

United Nations Environment Program (2009), *Report of the Seventh Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing*, UNEP/CBD/WG-ABS/7/8, 5 May.

Williams, C, (2008), *Access and Benefit-Sharing Bibliography, July 2008*, Royal Botanic Gardens, Kew, United Kingdom.

World Bank, *World Development Report 2008: Agriculture for Development*, Washington D.C WTO, TN/C/W/52, 19 July 2008.

World Intellectual Property Organization (WIPO) (2009), *Draft Report of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore*, WIPO/GRTKF/IC/14/12 Prov,2, August 26.

World Intellectual Property Organization (2009), *WIPO Assemblies provide directions for next Biennium*, WIPO press release PR/20090/611, 1 October.

World Intellectual Property Organization (WIPO) (2006), *Brief Summary of Working Documents*, WIPO/GRTKF/IC/9/INF/3, March.

World Intellectual Property Organization (2006), *Analysis of Potential Cases of Biopiracy*, Submission by the Government of Peru, WIPO/GRTKF/IC/10.

World Trade Organization (2008), Trade Negotiations Committee, Draft Modalities for TRIPS Related Issues, 19 July, TN/C/W/53.

World Trade Organization (2006), 'The relationship between the TRIPS Agreement and the Convention on Biodiversity', WTO Secretariat, IP/C/W368/Rev.1, 8 February.